A Longitudinal Examination of the Relations between Moral Disengagement and Antisocial Behavior in Sport

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Abstract

Moral disengagement (MD) has been positively associated with antisocial behavior in sport. However, the longitudinal associations between MD and antisocial behavior have been unexamined to date. Adopting a three-wave cross-lagged panel design, we examined the reciprocal relations between MD and two forms of antisocial behavior (i.e., towards opponents [ABO] and towards teammates [ABT]) across a competitive season with a sample of 407 team-sport athletes (M_{age} = 15.7 years) from Canada. Using structural equation modelling, we found strong positive autoregressive effects for moral disengagement and both forms of antisocial behavior across both time periods. We also identified strong positive synchronous correlations between moral disengagement and both types of antisocial behavior at each time point. Finally, cross-lagged effects were only found between moral disengagement and ABO; effects from moral disengagement to ABO were stronger than the reciprocal effects. These findings contribute important knowledge on the regulation of antisocial behavior in sport.

Key words: psychology, rationalization, panel analysis, cross-lagged, aggression

Introduction

Participation in sport can have numerous benefits for physical and psychological health in youth (Eime, Young, Harvey, Charity, & Payne, 2013). However, youth sport is not without its ills, as research has provided evidence of antisocial behavior occurring within this context (e.g., Kavussanu, Seal, & Phillips, 2006). As such, it is important researchers identify psychosocial factors that may facilitate antisocial behaviors in at-risk sports, so that appropriate interventions to deter such behavior can be developed. However, at present the relevant evidence base is limited by a lack of longitudinal research (Boardley, 2019). Thus, research is needed that looks at the temporal relations between antisocial behavior and relevant psychosocial factors in sport. The overarching aim of the current research was to contribute to this research need.

Antisocial behavior in sport has been defined as voluntary behavior intended to harm or disadvantage another (Sage, Kavussanu, & Duda, 2006). Research examining the dimensionality of antisocial behavior in sport identified two associated but distinct forms (Kavussanu & Boardley, 2009). One consists of antisocial behaviors toward opponents (e.g., trying to injure an opponent), whereas the other comprises acts toward teammates (e.g., verbally abusing a teammate). Whilst the former type comprises both physical and verbal behaviors, the latter only consists of verbal acts. Of importance though is that both forms of antisocial behavior include aggressive behaviors, defined in sport as overt verbal or physical behavior, chosen with the intent of causing injury and with the capacity to cause psychological or physical injury to another living being (Husman & Silva, 1984).

Observational, questionnaire-based, and qualitative research provides evidence of antisocial behavior in youth sport. For instance, Kavussanu et al. (2006) demonstrated frequency of antisocial behavior (e.g., late tackle, provoking opponent, body checking) increased with age across three age categories (12-13 years; 14-15 years; 16-17 years) in male soccer players. On average, in the oldest age category 15 antisocial acts occurred per hour per team. In a separate paper using the same sample, players reported mean levels of self-reported antisocial behavior toward opponents of 2.50 on a scale from 1 (*never*) to 5 (*very often*) across all matches played to that point in the season. Similarly, Bruner, Boardley, Benson et al. (2018) reported a comparable average frequency (i.e., M = 2.37) for self-reported antisocial behavior towards opponents in a study with youth ice-hockey players. Finally, qualitative research also provides evidence of antisocial behavior in youth sport. Across two studies with youth ice-hockey players, Bruner and colleagues provided detailed examples of antisocial verbal and physical behaviors occurring on a regular basis (Bruner, Boardley, Allan, et al., 2017; Bruner, Boardley, Allan, Forrest, Root, & Côté, 2017). Thus, research utilizing a range of methodological approaches supports the need to further understand the psychosocial factors leading to antisocial behavior in youth sport.

One psychosocial factor with the potential to help explain antisocial behavior in sport is moral disengagement (MD). Moral disengagement is a collective term for eight psychosocial mechanisms that allow people to justify and rationalize harmful behavior (Bandura, 1991). The mechanisms are moral justification, euphemistic labeling, advantageous comparison, diffusion of responsibility, displacement of responsibility, distortion of consequences, dehumanization, and attribution of blame. As an example, moral justification represents detrimental conduct made personally and socially acceptable by portraying it in the service of a valued social or moral purpose (Bandura, 1991); in sport this is seen when a player says s/he deliberately injured an opponent to protect a teammate. Another exemplar mechanism is displacement of responsibility, which reflects people viewing their actions as arising from social pressures or the directives of others, rather than as something for which they are personally responsible (Bandura, 1991); an example in sport is a player suggesting s/he is not responsible for injuring an opponent because he/she was told to do it by his/her coach. A full description of all mechanisms including sport-specific examples can be found in Boardley and Kavussanu (2007). According to Bandura (1991), use of one or more mechanisms facilitates damaging behavior by weakening or eliminating self-regulatory processes (i.e., anticipation of distasteful emotions such as guilt or shame) when engaging in such acts. Thus, MD may facilitate antisocial behavior in sport by allowing players to engage in such behavior without experiencing emotions that normally deter such action.

Research in sport supports the possibility MD facilitates antisocial behavior. Specifically, researchers have identified moderate-to-strong positive associations between MD and antisocial behavior toward opponents and teammates across a range of sports, and qualitative research has provided athlete accounts of MD when explaining antisocial acts in sport (see Boardley & Kavussanu, 2011 for a review). However, to date these links have only been identified with cross-sectional data, and as such it is not known whether changes over time in athletes' MD correspond with expected changes in antisocial behavior in sport.

Outside of sport, empirical evidence does support temporal links between MD and aggressive behavior. For instance, Paciello, Fida, Tramontano, Lupinetti, and Caprara (2008) investigated developmental trajectories in MD and aggression and violence with 14 to 20-year old adolescents in Italy, finding support for four major developmental trajectories. Of these, a trajectory reflecting maintenance of higher levels of MD over time was positively linked with more frequent aggression and violence in late adolescence. Subsequently, Hyde, Shaw, and Moilanen (2010) studied developmental precursors of MD, as well as its links with later antisocial behavior during childhood and adolescence with participants from low-income families in the USA. Of direct interest presently, they found MD at age 15 was a moderate positive predictor of antisocial behavior at age 16-17. Further, Muratori et al. (2017) found that across a 12-month period, earlier MD was predictive of later callous-unemotional traits – traits linked with aggression and violence – in a sample of adolescents with a disruptive behavior disorder in Italy, even when controlling for earlier MD and callous-unemotional traits. Finally, Sticca, Ruggieri, Alsaker and Perren (2013) discovered MD had moderate positive associations with both cyberbullying and traditional bullying across a six-month period in Swiss seventh graders. Thus, longitudinal research outside of sport has established positive links between MD and later aggressive and antisocial behavior across several studies.

Although Bandura's (1991) theory proposes MD precedes harmful action, reciprocal effects of antisocial behavior on MD may also occur. For example, athletes may increase the frequency with which they engage in antisocial behavior in response to situational factors (e.g., exposure to aggressive role models, reinforcement of such behavior by a coach). In order to reduce unpleasant emotional reactions as a result of increased engagement in such acts, individuals may increase their levels of MD to justify and rationalize their enhanced engagement in antisocial action. Thus, it is possible enhanced frequency of antisocial behavior results in increased levels of MD in sport.

Non-sport research supports the possibility that changes in transgressive behavior may lead to changes in MD. For instance, Caprara et al. (2014) conducted research in Italy that examined the reciprocal relations between MD and aggression and violence across four time points spanning adolescence (M_{Age} = 17 years) and young adulthood (M_{Age} = 25 years). Interestingly, as well as positive weak-to-moderate cross-lagged effects of MD on later aggression and violence being seen across all three time transitions, they also detected a weak positive effect of aggression and violence on MD between Time 2 and Time 3. Subsequently, Visconti, Ladd and Kochenderfer-Ladd (2015) examined USA school children's MD and aggression across three time points, collecting data from children (i.e., MD) and teachers (i.e., children's aggression) at the start of 4^{th}, 5^{th} and 6^{th} Grade. Cross-lagged panel analysis demonstrated weak positive cross-lagged effects of MD on aggression between Time 1 and Time 2 and Time 2 and Time 3. In addition, they also found equivalent cross-lagged effects of aggression on subsequent MD. Most recently, Sijtsema, Garofalo, Jansen and Klimstra (2019) examined the longitudinal interrelations between MD and antisocial behavior with Dutch adolescents (M_{Age} T1 = 13.57 years). Collecting data across three annual waves, cross-lagged panel analyses identified positive cross-lagged effects of antisocial behavior on MD between

Time 1 and Time 2 and Time 2 and Time 3. However, these effects were only observed for boys and not girls. No cross-lagged effects were seen between MD and later antisocial behavior. As the review of evidence demonstrates, research to date examining the cross-lagged effects between MD and antisocial behavior has been equivocal, with one study showing stronger support for cross-lagged effects of MD on antisocial behavior, another finding support for effects of antisocial behavior on MD only, and one demonstrating effects in both directions. However, to date researchers have not longitudinally tested such reciprocal effects between MD and antisocial behavior in sport.

Research examining the reciprocal temporal effects between MD and antisocial behavior in sport is needed, given the unique nature of sport as a context for moral action. Specifically, based on the theorizing of Bredemeier and Shields (1986), researchers have provided empirical support for the presence of bracketed morality (i.e., the temporary adoption of egocentricity during sport participation in comparison to that adopted during everyday life; Bredemeier & Shields, 1986) in sport. For example, studies have shown contextual differences in moral reasoning between sport and non-sport contexts (e.g., Bredemeier & Shields, 1986; Bredemeier, 1995), as well as differences in antisocial behavior (Kavussanu, Boardley, Sagar, & Ring, 2013) in and out of sport. These studies show a tendency for lower moral reasoning and more frequent antisocial behavior in sport compared to non-sport contexts. These observed differences in moral functioning in sport compared to non-sport contexts highlight the need for sport-specific research examining the interrelations between MD and antisocial behavior over time. Such research would provide important information regarding the directional effects between MD and antisocial behavior in sport, therefore informing future attempts to develop behavioral models of antisocial behavior in sport as well as interventions aimed at reducing harmful action in sport.

The Current Research

Whilst extant research has established consistent positive relations between MD and aggressive behavior in sport, research examining reciprocal relations between the two variables is limited to non-sport research. Thus, researchers have not longitudinally examined the reciprocal relations between MD and antisocial behavior in sport. As such, the aim of the current research was to examine the temporal interplay between MD and antisocial behavior in youth-sport participants[1]. Youth sport participants represent an important study population as they are undergoing a key life stage during which they not only experience much greater autonomy over their actions, but are also influenced by developmental changes to their cognitive, affective and behavioral systems (Casey, Jones, & Hare, 2008; Steinberg, 2005). As such, understanding the reciprocal effects of cognitive and behavioral factors during this period is of particular importance. In achieving its aims, the current study would extend work on antisocial behavior to an important developmental period within a novel context.

Based upon the extant literature, we forwarded hypotheses regarding the interrelations between variables over time. First, informed by research showing the stability of aggression over time, we hypothesized earlier antisocial behavior would be a strong positive contributor to later antisocial behavior (Adams, Bukowski, & Bagwell, 2005; Caprara et al., 2014; Visconti et al., 2015; Sijtsema et al., 2019). Similarly, based on existing evidence, we anticipated earlier MD would have a strong influence on later MD (Caprara et al., 2014; Visconti et al., 2015; Sijtsema et al., 2019). Finally, due to mixed findings in past research, we didn’t forward a definitive hypothesis for cross-lagged effects between MD and antisocial behavior (Caprara et al., 2014; Visconti et al., 2015; Sijtsema et al., 2019). However, if any such effects were identified, based on theory we expected stronger effects of MD on antisocial behavior in comparison to the opposite effects (Bandura, 1991; Caprara et al., 2014).

Method

[1] Whilst researchers have also linked MD with prosocial behaviour, such associations are generally much weaker and less consistent than those between MD and antisocial behaviour (see Boardley & Kavussanu, 2011). For this reason, we chose to focus solely on the reciprocal relations between MD and antisocial behaviour.

Participants

Participants were male (*n* = 257) and female (*n* = 150) athletes competing in high school soccer (*n* = 47), volleyball (*n* = 86) lacrosse (*n* = 12), ice hockey (*n* = 42), rugby (*n* = 27), American football (*n* = 58) or basketball (*n* = 135) in Canada. Athletes ranged in age from 13 to 19 years (*M* = 15.7, *SD* = 1.3), and on average engaged in 6.5 hours (*SD* = 3.0) of formal practice per week. This sample represented the 407 athletes who completed the questionnaire pack at all three times points (see procedures) out of the original 426 athletes who completed it at Time 1; this represents an attrition rate of 4.5%.

Measures

Antisocial behavior in sport. Two subscales from the Prosocial and Antisocial Behavior in Sport Scale (PABSS; Kavussanu & Boardley, 2009) were used to assess reported antisocial sport behavior toward teammates (five items; e.g., “verbally abused a teammate”) and opponents (eight items; e.g., “deliberately fouled an opponent”); behaviors toward teammates are all verbal in nature, whereas behaviors toward opponents are verbal or physical. Players were presented with the items describing antisocial behaviors and were asked to report how often they had engaged in each behavior this season on a scale anchored by 1 (*never*) and 5 (*very often*). Evidence for the content, factorial, concurrent, and discriminant validity of scores obtained with the PABSS has been provided (Kavussanu & Boardley, 2009), and the antisocial teammate and opponent behavior subscales have shown good-to-very-good levels of internal consistency (α = 83, and α = .86, respectively).

Moral disengagement. The Moral Disengagement in Sport Scale - Short (MDSS-S; Boardley & Kavussanu, 2008) was used to assess athletes’ sport moral disengagement. Athletes were asked to read a series of eight statements describing thoughts and feelings relating to competitive sport, and to indicate their level of agreement from 1 (*strongly disagree*) to 7 (*strongly agree*). An example item is “Insults among players do not really hurt anyone”. Scores obtained with the MDSS-S have demonstrated good levels of internal consistency (α = .80 to .85) and their factorial, convergent, and concurrent validity have been supported (Boardley & Kavussanu, 2008).

Procedures

After obtaining institutional and school-board ethics approval, coaches from three school boards in Canada were invited to participate in the study. Contact with approximately 80 coaches involved presentations at school-board athletic meetings and invitations to speak with high-school coaches at their respective schools. Participants were recruited from the high school teams of interested coaches, and players from 35 teams participated. The third author or a research assistant provided an explanation of the study at the beginning or end of a scheduled practice session at the beginning of the season. Athletes were presented with an information sheet, an athlete assent form and parental consent form. Informed assent and parental consent were obtained from all participants who volunteered to take part. Participants completed a paper questionnaire on the study variables and demographic questions in person at the beginning (2 weeks), middle (6-8 weeks) and end (12-16 weeks) of the regular season.

Results

Data screening, descriptive statistics, scale reliabilities, and correlations

There were just eight missing data points out of the 34,188 responses, representing just .02% of the study data. Normality of all study variables was evidenced by skewness and kurtosis values of <|2|. Descriptive statistics, scale reliabilities, and correlations between primary variables are presented in Table 1. Internal consistencies were estimated using Raykov composite reliabilities (Raykov, 2009). As can be seen in Table 1, the scales demonstrated good-to-excellent levels of reliability, with all values well above .70. Further, positive strong to very strong bivariate correlations between all study variables were observed (see Cohen, 1992). However, notably the relations between antisocial behavior and moral disengagement when both variables were assessed at the same time point were consistently stronger than when variables from different time points were correlated. In addition, relations involving the same construct were reliably stronger than those between different constructs.

Cross-lagged panel analyses

To examine whether moral disengagement (MD) predicted longitudinal changes in antisocial behavior toward opponents (ABO) and/or teammates (ABT), and/or vice versa, two three-wave cross-lagged panel analyses were conducted (Cook & Campbell, 1979; Kenny & Harackiewicz, 1979). This analytical approach was appropriate because our research aims were relevant to the examination of covariance stability over time (see McArdle, 2009), rather than investigation of within-person change and between-person differences in within-person change (Stenling, Ivarsson, & Lindwall, 2016). Our analytical approach was also consistent with that adopted in the three studies upon which we established the primary rationale and hypotheses for our study (Caprara et al., 2014; Visconti et al., 2015; Sijtsema et al., 2019). The analyses involve testing models containing three components. The first of these are synchronous correlations; the associations among study variables within each particular time point (e.g., MD at T1 with ABO at T1). These indicate the magnitude and direction of the cross-sectional relations between variables. The second component are the autoregressive paths; the predictive paths for the same variable assessed at different time points (e.g., MD at T1 to MD at T2). These paths reflect the stability of variables across time. The third component are the cross-lagged paths; the predictive paths between different variables across time points (e.g., MD at T1 to ABO at T2). These represent the proportion of change in one variable across time points uniquely explained by another, once synchronous correlations and autoregressive paths are accounted for. Thus, through interpretation of the cross-lagged effects, we aimed to determine the reciprocal causal effects between MD and ABO/ABT across three time points spanning a competitive season.

Analyses were conducted using Mplus 7.2 (Muthén- Muthén, 1998-2015). The robust maximum likelihood estimation was used to account for missing data under the missing at random assumption (Enders, 2010; Muthén- Muthén, 1998-2015). Based on relevant guidance (Bentler, 2007), we included various fit indices: Chi-square (χ^2); comparative fit index (CFI); standardized root mean square residual (SRMR); and root mean square error of approximation (RMSEA). CFI $\geq$.90 and RMSEA $\leq$.08 are indicative of adequate model fit, whereas CFI $\geq$.95 and RMSEA $\leq$.05 signify good fit (Hu & Bentler, 1999).

To answer the main research questions, five competing models were tested (Nordin-Bates, Hill, Cumming, Aujla, & Redding, 2014; Madigan, Stoeber, & Passfield, 2015; Zacher & de Lange, 2011). First, a temporal stability model (M1) was tested to provide a baseline for comparison with subsequent models; this included synchronous and auto correlations but not cross-lagged correlations. Second, a cross-lagged model (M2) in which MD affected AB over time but without reciprocal temporal effects was specified; this model included cross-lagged effects between MD at T1 and AB at T2 and MD at T2 and AB at T3. Third, a reverse cross-lagged model (M3) in which AB affected MD over time but without the reciprocal effects was specified; this model included cross-lagged effects between AB at T1 and MD at T2 and ABO at T2 and MD at T3. Fourth, a constrained reciprocal cross-lagged effects model (M4) in which MD and AB affected each other equally over time was specified; this model included all possible cross-lagged effects between T1 and T2 and T2 and T3, but with the paths between MD and AB constrained to be equal. Finally, an unconstrained reciprocal cross-lagged effects model (M5) was specified; this model was identical to model M4 except that no constraints were imposed on causal paths between time points. To compare model fit between the five models, χ^2 difference tests were conducted.

Measurement model. Before testing the five models, we tested the measurement model at each time point (see James, Mulaik & Brett, 1982). Thus, for the data from each time point we specified a model in which the posited relations of the observed variables to their underlying latent constructs, with these constructs allowed to intercorrelate. First, for the MD and ABO T1 data, the model had a good fit, χ^2 (103) = 198.54, p = <.001; CFI = .95;

RMSEA = .05; SRMR = .04. Next, for the MD and ABO T2 data, the model had a good fit, χ^2 (103) = 227.81, *p* = <.001; CFI = .95; RMSEA = .06; SRMR = .04. Finally, for the MD and ABO T3 data, the model had an adequate fit, χ^2 (103) = 337.94, *p* = <.001; CFI = .91; RMSEA = .08; SRMR = .04. Then, for the MD and ABT T1 data, the model had a fairly good fit, χ^2 (64) = 161.22, *p* = <.001; CFI = .93; RMSEA = .06; SRMR = .04. Next, for the MD and ABT T2 data, the model had a good fit, χ^2 (64) = 163.41, *p* = <.001; CFI = .94; RMSEA = .06; SRMR = .04. Finally, for the MD and ABO T3 data, the model had a good fit, χ^2 (64) = 194.18, *p* = <.001; CFI = .94; RMSEA = .07; SRMR = .04. Given the fit of each measurement model was at least adequate, we proceeded with the structural analyses. When testing the five models, equality constraints over time were imposed on factor loadings and indicator intercepts to establish measurement invariance (Stenling et al., 2016), and each indicator was allowed to correlate over time to account for indicator-specific variance (Little, 2013).

Structural models. The fit indices and model comparisons for the five models are reported in Table 2 and Table 3[2]. The fit indices obtained demonstrate good levels of fit across all ten models tested. For the models concerning ABO (see Table 2), model comparisons based upon χ^2 difference tests indicated those specifying cross-lagged paths (i.e., M2-M5) had improved fit over the one with no cross-lagged paths (i.e., M1)[3]. However, as there was no significant difference between the constrained (i.e., M4) and unconstrained (i.e., M5) models, we accepted M4 as our final model and interpreted the parameter estimates from this model (see Figure 1 and Table 4). First, in terms of the autoregressive paths, these were statistically significant and very strong for MD and ABO, demonstrating high stability of both variables across time. Next, the synchronous correlations showed a strong positive association between MD and ABO at all three time points. Finally, the cross-lagged paths from T1 to T2

[2] In response to a reviewer's comment, we retested the final model for both sets of analyses whilst controlling for gender. Controlling for gender had no meaningful impact on model fit or parameter estimates.
[3] Please note ΔCFI suggests equivalence of model fit for these model comparisons. Our acceptance of model M4 was based upon the χ^2 difference test and would not have been supported if we had used ΔCFI as our criterion.

and T2 to T3 were positive and moderately strong for the MD to ABO paths and positive and very weak for the ABO to MD paths.

For the models relevant to ABT (see Table 3), model comparisons based upon χ^2 difference tests showed no improvement in fit for those specifying cross-lagged paths (i.e., M2-M5) in comparison to the model with no cross-lagged paths (i.e., M1). As such, we accepted M1 as our final model and interpreted the parameter estimates from this model (see Figure 2 and Table 5). First, regarding autoregressive paths, these were statistically significant and very strong for MD and ABT, demonstrating high stability of both variables across time. Next, the synchronous correlations showed a strong positive association between MD and ABT at all three time points. Finally, the acceptance of this model provides no evidence of cross-lagged effects between MD and ABT from T1 to T2 or T2 to T3.

Discussion

Through the current study, we aimed to investigate the interrelations between moral disengagement and antisocial behavior over three time points across a competitive season. Using structural equation modeling to examine a series of models, we identified several important effects. First, consistent with our hypotheses we found earlier antisocial behavior was a strong positive predictor of later antisocial behavior and earlier MD had strong positive links with later MD. Next, MD predicted longitudinal changes in ABO from the start to the middle of the season, and from the middle to the end of the season, with weak positive effects over both time periods. In contrast, ABO did not meaningfully predict changes in MD across either of the time periods studied, with only very weak positive effects detected over both time periods. Further, no significant cross-lagged effects were found between MD and ABT. Through these findings, this study has made important novel contributions to our understanding of the intrapersonal processes that govern youth antisocial behavior in sport.

Consistent with expectations, for both ABO and ABT earlier antisocial behavior was a strong positive predictor of future antisocial behavior. Thus, those athletes reporting more frequent antisocial behavior towards opponents and teammates at earlier time points were also the ones most likely to report being antisocial more frequently at the later time points. Although such relations have not previously been examined in sport-based research, these findings are consistent with research on antisocial behavior outside of sport. For instance, three studies utilizing cross-lagged panel analyses all reported autocorrelations demonstrating high levels of stability in aggression, violence, and antisocial behavior across periods of up to four years (Caprara et al., 2014; Sijtsema et al., 2019; Visconti et al., 2015). Thus, alongside research from outside of sport, the present findings suggest antisocial and aggressive behavior have a high degree of stability. However, although based on this evidence it is reasonable to expect frequency of antisocial behavior towards teammates and opponents to endure over time, non-sport research suggests aggressive behavior may be malleable at least to some degree. Specifically, whilst Adams et al. (2005) found aggression to be generally stable over a six-month period in American early adolescents, stability was moderated by the nature of adolescents' friendships and this was especially so for those initially high in aggression. Specifically, those who interacted with aggressive friends over the six months maintained high levels of aggression whereas those who interacted with friends low in aggression decreased in their aggression over the period of study. Thus, these findings suggest it may be possible that despite the high levels of stability detected presently, frequency of antisocial behavior could be influenced by athletes' exposure to aggressive conduct over time. However, future research is needed to examine this within the sport context.

Also, in alignment with our hypotheses, MD at earlier time points was a strong positive predictor of MD at subsequent time points; those with higher MD at earlier time points were more likely to have higher MD in the future. This finding is consistent with those of Caprara et al. (2014), Sijtsema et al. (2019) and Visconti et al. (2015), who found strong autocorrelations for MD across time periods of up to four years. Similarly, Teng et al. (2017) found Chinese secondary-school children's MD at Time 1 was a moderate-to-strong positive predictor of their MD five months later. Thus, the present findings are part of a growing evidence base suggesting MD is a relatively stable cognitive orientation. Despite this, research suggests MD is still susceptible to contextual influences (see Moore, 2015). Thus, it is important future work identifies which contextual influences are most effective in reducing MD. For instance, past research has negatively linked athletes' perceptions of their coach's character building competency (i.e., a coach's belief in his or her ability to influence athletes' personal development and positive attitudes towards sport; Feltz, Chase, Moritz, & Sullivan, 1999) with their MD (Boardley & Kavussanu, 2009). Thus, sustained exposure to coach behaviors reflecting high levels of character-building competency may reduce athletes' MD. Research is needed that helps identify contextual influences that reduce athletes' MD.

Regarding cross-lagged effects, for ABO our findings were largely in line with our predictions. Specifically, whilst we detected significant cross-lagged effects from MD to ABO and from ABO to MD across both time periods, the effects were stronger – and arguably only meaningful – from MD to ABO. Whilst weak, the magnitudes (i.e., .15) of the cross-lagged effects from MD to ABO were in line with past research outside of sport. Namely, Caprara et al. (2014) found cross-lagged effects of MD on engagement in aggression and violence between .13 and .18 in a sample of young adults in Italy, and Visconti et al. (2015) detected cross-lagged effects of .11 and .15 for MD on aggression with Children in the United States. These findings are in line with Bandura (1991), which proposes MD facilitates antisocial behavior by weakening or eliminating anticipated unpleasant emotional consequences of harmful behavior.

In terms of the lack of a meaningful cross-lagged effect from ABO to MD, our findings are again consistent with Bandura's (1991) proposition that MD facilitates antisocial behavior by rationalizing acts prior to their occurrence, rather than acting as a means of addressing unpleasant emotions after the event. However, as outlined earlier empirical evidence has proved inconsistent on this, with some studies finding weak positive cross-lagged effects from aggression to MD (Visconti et al., 2015), others finding a mixture of significant and non-significant cross-lagged effects of aggression and violence on MD (Caprara et al., 2014), and others finding significant cross-lagged effects of antisocial behavior on MD for males but not for females (Sijtsema et al., 2019). Recent experimental research may help elucidate why findings have been inconsistent in this regard. Specifically, Tillman, Gonzalez, Whitman, Crawford and Hood (2018) adopted a scenario-based laboratory study to provide support for their assertion that as well as using MD prior to committing an unethical act, individuals also morally disengage to reduce emotional duress upon learning of the consequences of their actions. However, for such post-act MD to occur culprits must become aware of some negative consequences stemming from their actions only after the event and being unaware of them prior to the event (see Tillman et al., 2018 for more detail). If this is not the case – and perpetrators are aware of all the consequences of their actions before acting unethically – then it is likely they will have already fully rationalized the consequences through pre-act MD prior to action. As such, it may be the case that unanticipated consequences are more common in some contexts than in others and it is this that explains the lack of consistency on cross-lagged effects from harmful behavior to MD. Based on the current evidence it doesn’t seem that post-act MD is resulting from athletes’ engagement in antisocial behavior on a consistent basis within sport.

Regarding ABT, we found no cross-lagged effects between MD and ABT in either direction. The contrasting findings for ABT in comparison to ABO may be due to differences in the nature of antisocial acts athletes engage in towards teammates compared to opponents (see Kavussanu & Boardley, 2009). Specifically, whilst ABO involves both verbal and physical antisocial acts, ABT only includes verbal acts of aggression. It is possible verbal aggression is more automatically legitimized within sport than physical aggression, therefore lessening the need for MD to rationalize engagement in it. This possibility is supported by research that has shown harm stemming from verbal aggression can be legitimized by game rules or procedures, whereas physical aggression appears more resilient to such contextual influences (Helwig, Hildebrandt, & Turiel, 1995). As a result, there may be a stronger causal link between MD and physical aggression than with verbal aggression in the sport context.

Limitations and future directions

Despite making important contributions to knowledge, our findings should be considered alongside relevant study limitations. First, whilst based upon key time points during the competitive season, our time lags were not as long as some longitudinal investigations of MD and aggressive behavior (i.e., Caprara et al., 2014). It is possible our findings may have been different if we collected data across longer time periods. As such, research examining the strength and consistency of effects across different time gaps is needed. Further, now we have some understanding of the temporal reciprocal interplay between MD and antisocial behavior in sport, future researchers could employ latent variable growth models to examine changes in MD and AB within athletes' developmental trajectories.

It is also important to acknowledge the limitation imposed through our assessment of self-reported antisocial behavior. It is possible – due to social desirability and memory recall effects – that some participants misreported their engagement in antisocial behavior. In the future it would be interesting to examine whether the present results are replicated using other indices of antisocial behavior such as other-reported (e.g., parent or coach reports) or observed (i.e., via video recording and behavioral coding) behavior. Also noteworthy is that the cross-lagged effects detected were quite small. However, these effects should be considered meaningful given they represent effects over time that account for synchronous and autoregressive effects between variables. Finally, future researchers should consider including possible covariates of MD and AB (e.g., irascibility, rumination; see Bandura, Barbaranelli, Caprara, & Pastorelli, 1996) to further our understanding on psychosocial factors influencing antisocial behavior.

Conclusion

The present findings represent an important progression in research seeking to further understanding on factors influencing antisocial behavior in sport, as well as contributing more broadly to empirical work supporting the relevance of Bandura's (1991) theorizing for our understanding of antisocial behavior. This research provided the first empirical evidence in sport research of strong autoregressive links over time for antisocial behavior and MD. In addition, the contrasting cross-lagged effects for ABO compared to ABT highlighted the importance of distinguishing between different types of antisocial behavior. Finally, the identification of stronger cross-lagged effects from MD to antisocial behavior in comparison to the opposing effects provides support for Bandura's (1991) contention that MD is an important prerequisite of harmful behavior, as opposed to being an outcome of it.

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Table 1

Descriptive Statistics, Scale Reliabilities, and Correlations for all Study Variables (N = 407)

Variable	*M*	*SD*	Range	1	2	3	4	5	6	7	8	9
1. ABO T1	2.12	0.78	1.00 – 4.75	(.86)								
2. ABT T1	1.87	0.69	1.00 – 4.40	.66**	(.82)							
3. MD T1	2.99	1.12	1.00 – 5.75	.56**	.49**	(.83)						
4. ABO T2	2.17	0.82	1.00 – 5.00	.70**	.48**	.46**	(.88)					
5. ABT T2	1.93	0.73	1.00 – 5.00	.49**	.60**	.35**	.66**	(.83)				
6. MD T2	2.99	1.23	1.00 – 7.00	.50**	.40**	.68**	.62**	.49**	(.88)			
7. ABO T3	2.28	0.87	1.00 – 4.88	.63**	.41**	.46**	.71**	.47**	.53**	(.89)		
8. ABT T3	2.06	0.80	1.00 – 4.80	.47**	.53**	.34**	.52**	.65**	.40**	.68**	(.87)	
9. MD T3	3.04	1.26	1.00 – 7.00	.45**	.35**	.62**	.55**	.40**	.72**	.67**	.53**	(.88)

Note. Raykov (2009) composite reliability coefficients are presented on the diagonal. Possible scale ranges: 1– 5 for antisocial behavior toward opponents and antisocial behavior toward teammates; 1 – 7 for moral disengagement. ABO = antisocial behavior toward opponents; ABT = antisocial behavior toward teammates; MD = moral disengagement; T1 = Time 1; T2 = Time; T3 = Time 3.

** *p* <.01.

Table 2

Fit indices and χ^2 difference tests of nested models for ABO model (N = 407)

Variable	χ^2	*df*	CFI	RMSEA	SRMR	Comparison	$\Delta\chi^2$	Δdf
No cross-lagged effects (M1)	1613.80**	1053	.94	.04	.06			
Cross-lagged moral disengagement to antisocial behavior (M2)	1600.55**	1051	.94	.04	.05	M1 vs. M2	13.25**	2
Cross-lagged antisocial behavior to moral disengagement (M3)	1602.49**	1051	.94	.04	.05	M1 vs. M3	11.31**	2
Reciprocal cross-lagged constrained (M4)	1597.45**	1052	.94	.04	.05	M1 vs. M4	16.35**	1
Reciprocal cross-lagged unconstrained (M5)	1595.91**	1049	.94	.04	.05	M1 vs. M5	17.89**	4
						M2 vs. M5	4.64	2
						M3 vs. M5	6.58*	2
						M4 vs. M5	1.54	3

Note. ** p <.01, * p <.05

Table 3

Fit indices and χ^2 difference tests of nested models for ABT model (N = 407)

Variable	χ^2	*df*	CFI	RMSEA	SRMR	Comparison	$\Delta\chi^2$	Δdf
No cross-lagged effects (M1)	1049.41**	678	.95	.04	.05			
Cross-lagged moral disengagement to antisocial behavior (M2)	1045.30**	676	.95	.04	.05	M1 vs. M2	4.11	2
Cross-lagged antisocial behavior to moral disengagement (M3)	1051.17**	676	.95	.04	.05	M1 vs. M3	1.76	2
Reciprocal cross-lagged constrained (M4)	1045.99**	677	.95	.04	.05	M1 vs. M4	3.42	1
Reciprocal cross-lagged unconstrained (M5)	1047.35**	674	.95	.04	.05	M1 vs. M5	2.06	4
						M2 vs. M5	2.05	2
						M3 vs. M5	3.82	2
						M4 vs. M5	1.36	3

Note. ** p <.01, * p <.05

Table 4

Cross-lagged Panel Model Estimates for Antisocial Behavior towards Opponents (M4)

CLPM 1				
		Estimate[a]	SE	p value
Autoregressive paths				
ABO T1 – ABO T2		.66	.05	<.001
ABO T2 – ABO T3		.65	.04	<.001
MD T1 – MD T2		.76	.03	<.001
MD T2 – MD T3		.76	.03	<.001
Cross-lagged paths				
ABO T1 – MD T2		.04	.01	<.001
ABO T2 – MD T3		.04	.01	<.001
MD T1 – ABO T2		.15	.04	<.001
MD T2 – ABO T3		.15	.04	<.001
Synchronous correlations				
ABO T1 – MD T1		.69	.04	<.001
ABO T2 – MD T2		.58	.07	<.001
ABO T3 – MD T3		.62	.07	<.001
	R^2			
ABO T2	.58			
ABO T3	.58			
MD T2	.62			
MD T3	.63			

[a]Standardized coefficients; ABO = antisocial behavior toward opponents; MD = moral disengagement; T1 = Time 1; T2 = Time; T3 = Time 3; SE = standard error.

Table 5

Autoregressive and Synchronous Estimates for Antisocial Behavior towards Teammates (M1)

		Estimate[a]	SE	p value
Autoregressive paths				
ABT T1 – ABT T2		.67	.05	<.001
ABT T2 – ABT T3		.72	.04	<.001
MD T1 – MD T2		.77	.04	<.001
MD T2 – MD T3		.78	.03	<.001
Synchronous correlations				
ABT T1 – MD T1		.59	.05	<.001
ABT T2 – MD T2		.51	.07	<.001
ABT T3 – MD T3		.56	.09	<.001
	R^2			
ABT T2	.49			
ABT T3	.52			
MD T2	.60			
MD T3	.60			

[a]Standardized coefficients. ABT = antisocial behavior toward teammates; MD = moral disengagement; T1 = Time 1; T2 = Time 2; T3 = Time 3; SE = standard error.

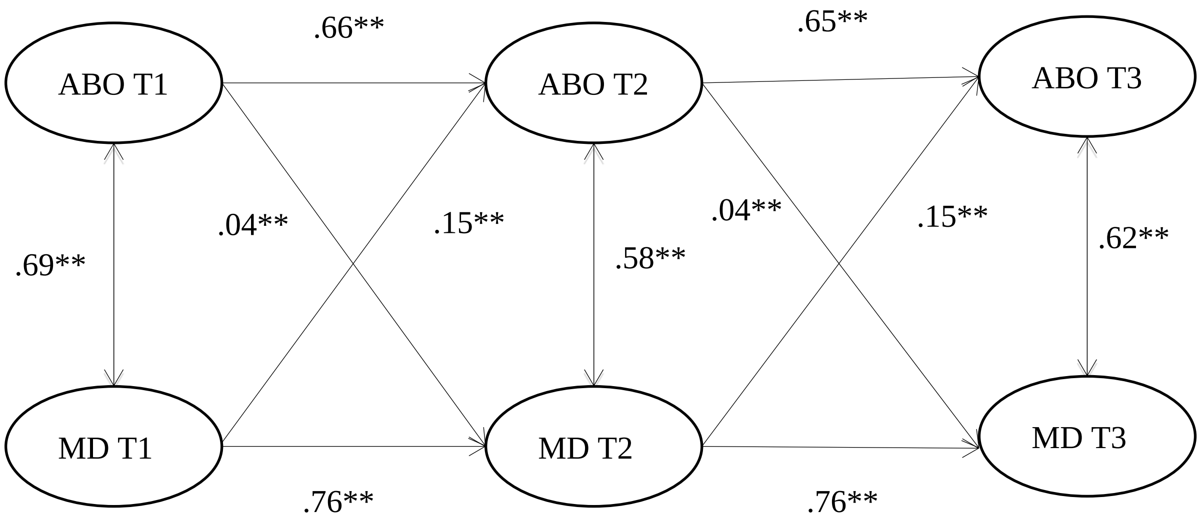

Figure 1. Three-wave cross-lagged panel model linking antisocial behavior toward opponents and moral disengagement across time (M4). ABO = antisocial behavior toward opponents; MD = moral disengagement; T1 = Time 1; T2 = Time 2; T3 = Time 3.

$^{**}p < .01$

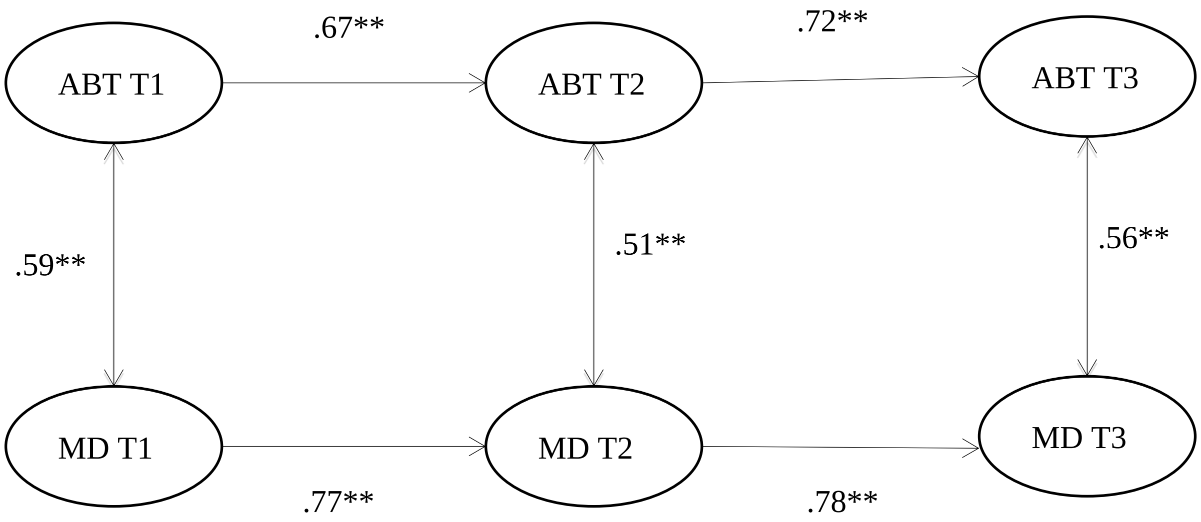

Figure 2. Three-wave panel model linking antisocial behavior toward teammates and moral disengagement (M1). ABT = antisocial behavior toward teammates; MD = moral disengagement; T1 = Time 1; T2 = Time 2; T3 = Time 3.

**p < .01